Ocean and Coastal Acidification: May 11th Meeting with EPA/UW/NOAA: Summary and Action Items

Attendees

UW: Terrie Klinger, Jan Newton
NOAA: Schallin Busch, Simone Alin, Nina Bednarsek, and Libby Jewett (from DC)
EPA: Lori Cora, Ben Cope, Mike Cox, Jill Fullagar, Bridgette Lohrman, Michelle Davis, Cheryl Brown, Rochelle Labiosa, Brian Rappoli, Bill Dunbar, Bruce Duncan, Gina Bonifacino, Hudson Slay, Molly Martin, John Carroll, Janet Hashimoto, and Sam Ziegler

Action Items

1. Jill F. will follow-up with Jan about submitting data and the timing for the submission.

2. Jill F. will get back to Jan about EPA attendance at the May 26th Washington Ocean Acidification Center Science Symposium.

3. Rochelle L. will coordinate with other EPA staff to review the UW OA website and see whether the information could inform EPA CWA decisions.

4. Ben C. will look at data from NOAA collaborations to see if the information could be useful for the Ecology/PNNL modeling effort.

5. EPA Region 10 will discuss with EPA Region 9 about closer internal coordination and collaboration as well as with NOAA and UW.

Summary

We have provided a brief summary of the discussions below.

Review of 303(d) Process
- Jill Fullagar provided an overview of the CWA 303(d) listing process.
  - States are on a 2-year cycle for listings. Data are compared to Water Quality Standards and used to make decision whether to list that waterbody as "impaired".
  - For OCA the waters would not be listed for ocean acidification but could be for either pH or a narrative standard such as "impaired aquatic life".
  - The national marine aquatic life pH criterion for open waters is a pH range of 6.5 to 8.5.
  - Once a waterbody is listed, each state is given deference to develop priorities and plans and/or TMDLs for managing the impairment.
- Oregon has submitted marine water listings and EPA is now reviewing. Oregon did not list any coastal waters as impaired at this time.
- Washington will submit freshwater listing soon. Marine waters are scheduled for next year.
- Useful data
  - Ambient conditions, local ecological effects, and modeling can be used.
  - Hatchery intake time series data could be useful if it reflects ambient conditions in State waters.
  - For biological effects there was question about whether we need population level data or individual effects?

- In Region 10 narratives are written to community level impacts.
- Region 9 indicated they have extrapolated from some individual data in past – R10 has not.
  - There was a question about using carbonate parameters to derive pH since pH methods are unreliable. EPA indicated this maybe okay as long as well documented, since this is an appropriate calculation.

Washington Ocean Acidification Center Activities

- Jan and Terrie presented on-going work at the Center.
- Monitoring: Showed monitoring network in Region. Monitoring results from Dabob, Willapa, Whiskey Creek, AK and CA will be on IPAC website (IPACOAC.org). There is shellfish and nearshore monitoring and collaboration with Olympic National Park collaboration. Comparing to newest sensors and doing simultaneous biological sampling.
- Biological Impacts: At the June 26th WAOAC Science Symposium they will present results from biological experiments. Laboratory results include delayed development in crabs and reduced survival in krill at CO2 relevant concentrations.
- Biological Impacts: Pteropod impacts being seen in space and time in Puget Sound – actual holes not just etching seen in La Push. Dissolution being seen in Arctic, North Sea and Maine (preliminary).
- Forecast models: Provided an overview of forecast modeling.
- PACE Postdoc: Using TA and salinity relationships to back out longer time series of pH and carbonate parameterizations.

NOAA Activities

- Developed an OA plan in 2010 that had seven themes.
- Developing new pH and DIC sensors.
- High frequency OA sensors in the open ocean. Developing a West Coast network (2 CA, 1 OR, several WA).
- Using O2, temp, salinity data together that can be used to determine pH, CO2 and other carbonate parameters.
- Work is focused offshore and not much in nearshore.
- Working with UW to forecast different carbonate parameters.
- Developing biological indicators of effects for Dungeness crab for benthic, shellfish nearshore, and pteropod pelagic.
- Working on assessments in state waters: pteropods, HABS (which can be exacerbated by OA), hatchery time series.
- Netarts Bay, Dabob Bay, Hood Canals – highest quality data have been collected since last fall. Moorings with DIC and CO2 params – providing sense of variability.
- Biological experiments at NOAA since 2009 with copepods; geoduck; china rockfish; pteropods.
- Sensitivity in species across range of conditions. Direct and indirect effects. Modeling done with Paul McElhaney and PNNL – pH model overlay with species locations in space and time to look at aggregate effects from exposure.
- Working with interagency workgroup on OA (13 agencies). There is a need for more and improved modeling along with better coordination.

EPA Activities

- Cheryl B. discussed the EPA RARE project. The QAPP is done and sampling will start in July. Sampling will use stable isotopes to do source attribution in addition to carbonate chemistry in Snohomish estuary.
- Ben C. discussed the status of the Ecology/PNNL modeling work. The QAPP is out for review. Data should help to fill in what is needed in model parametrization/calibration
- Lori C. discussed the CBD litigation. The judge upheld EPA decisions.
- There was discussion on quantification around 0.2 pH unit from anthropogenic water quality criterion and how to estimate in listing decision. EPA indicated needed to do weight of evidence analysis and level of scientific disagreement/agreement on studies/data.